

REMARKS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

Claims 1-7, 9-12 and 14-23 are pending. Claims 1, 4 and 20-21 are amended. No new matter is introduced.

In the outstanding Office Action, Claims 1-2, 4-7, 11, 14-15, 17-20 and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takekuma (U.S. Patent No. 6,377,329) in view of Kimura et al. (U.S. Patent No. 6,439,822, hereafter “Kimura”), Yoshioka (U.S. Patent No. 6,168,667), Lei et al. (U.S. Patent No. 6,277,199, hereafter “Lei”) and Makino et al. (U.S. Patent Application Publication No. 2005/0051091, hereafter “Makino”); Claim 3 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Takekuma, Kimura, Yoshioka, Lei, and Makino in further view of Masayki et al. (JP 10-012528, hereafter “Masayki”); Claims 9-10 and 21 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takekuma, Kimura, Yoshioka, Lei, and Makino in further view of Slocum et al. (U.S. Patent No. 5,733,024, hereafter “Slocum”) and Cakmakci (U.S. Patent No. 4,836,968); and Claims 12, 16 and 23 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takekuma, Kimura, Yoshioka, Lei, and Makino in further view of Slocum.

Initially, Applicants thank the courtesy of Examiner Ford to interview this case with Applicants representative on April 27, 2009. During the interview the outstanding issues in this case were discussed, as summarized herein and in the Interview Summary, which the Examiner has made of record. No agreement was reached as the Examiner indicated that further search and consideration would be required before he could state whether claim amendments and arguments presented are sufficient to overcome the cited references.

In reply to the rejection of Claims 1-2, 4-7, 11, 14-15, 17-20 and 22 as being unpatentable over Takekuma, Kimura, Yoshioka, Lei, and Makino, Claim 1 is amended to

recite, *inter alia*, a substrate processing apparatus that includes a plurality of process blocks freely attachable/detachable with respect to the transfer block, where:

each process block including a *chemical unit storing tanks of chemical solutions, a utility unit having connection ends for supplying utilities, a liquid process unit having a coating unit for applying a resist solution to the substrate and a developing unit for performing developing processing on the substrate after exposure to light*, a heating unit for heating the substrate, third transfer means for transferring the substrate between the units, and a second delivery stage for performing delivery of the substrate between said second transfer means and said third transfer means...

...application of the resist solution and development after exposure to light being performed on the substrate *in the units of the respective process blocks*. (Emphasis added.)

Turning to the primary reference, Takekuma describes a substrate processing apparatus that alleviates the burden on a main conveying mechanism to increase throughput.<sup>1</sup> Takekuma also describes that the apparatus includes a first processing block (100) that includes four coating units (3), a second processing block (200) including a light exposure apparatus (52), and a third processing block (300) that includes four developing units (5).<sup>2</sup> In other words, Takekuma describes that each processing block (100, 200, 300) performs different processing. However, as acknowledged by the outstanding Office Action, Takekuma does not describe any processing block that includes both a coating unit (3) and a developing unit (5).<sup>3</sup> To remedy this deficiency in Takekuma the outstanding Office Action combines Takekuma with Kimura, Lei and Makino.

Kimura describes a compact system for substrate processing.<sup>4</sup> The system includes, in part, a processing section (111) in which the processing units are multi-tiered around a main arm (122) and grouped into processing unit groups, for example (G<sub>1</sub>, G<sub>2</sub>).<sup>5</sup> While each

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<sup>1</sup> Takekuma at column 2, lines 10-15.

<sup>2</sup> Takekuma at column 6, lines 19-50; see also column 7, lines 24-30.

<sup>3</sup> See the outstanding Office Action at page 3.

<sup>4</sup> Kimura at column 1, lines 49-55.

<sup>5</sup> Kimura at column 8, line 25 - column 9, line 6.

processing group ( $G_1$ ,  $G_2$ ) may include a coating unit (COT) and a developing unit (DEV), Kimura does not describe that the coating unit (COT) and developing unit (DEV) are integrated into the processing group ( $G_1$ ,  $G_2$ ), much less that the processing groups are freely attachable/detachable from the processing section (111). Instead, Kimura merely describes that the processing units are arranged around the main arm (122) and grouped by function.<sup>6</sup> Further, Kimura does not describe that the processing groups ( $G_1$ ,  $G_2$ ) include a chemical unit and a utility unit as recited in Claim 1. As such, Kimura does not cure the above-noted deficiencies in Takekuma.

Moreover, Lei and Makino do not cure the above -noted deficiencies in Takekuma in so far as neither describes a process block including a chemical unit, a utility unit, and a liquid processing unit as required by amended Claim 1.

As first recognized by the present inventors, the features recited in amended Claim 1 synergistically combine to allow liquid processing, heating and cooling to be performed to completion within every process block. This unexpectedly results in the ability to increase or decrease throughput by adding or removing *a single process block*. Conversely, in Takekuma, for example, at least *two* process blocks must be added or removed to affect throughput, because each process block performs a different function as discussed above. Further, the features recited in amended Claim 1 also provide the unexpected result of allowing processing of substrates to continue even when one or more processing blocks are damaged or otherwise fail.

The Supreme Court recognized in *KSR Int'l Co. v. Teleflex Inc.*, 82 USPQ2d 1385, 1395 (2007), that “when a patent claim is structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result,” but also noted that “[t]he fact that the elements work

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<sup>6</sup> Id.

together in an **unexpected and fruitful manner** supported the conclusion that [the claimed] design was not obvious to those skilled in the art.”<sup>7</sup>

The claimed combination of features recited in amended Claim 1 work together in an unexpected and fruitful manner to allow increasing or decreasing throughput by adding or removing a single process block, and also allow production to continue even when one or more process blocks fail. As such, it is submitted that one of ordinary skill in the art would not expect the results achieved with the claimed apparatus from the combination of Takekuma, Kimura, Yoshioka, Lei, and Makino. Therefore, amended Claim 1, and its corresponding dependent claims, are believed to be in condition for allowance for the foregoing reasons.

Moreover, amended Claims 4 and 20 recite substantially the same features, and are thus believed to be in condition for allowance for substantially the same reasons. Accordingly, it is respectfully requested that the rejection of Claims 1-2, 4-7, 11, 14-15, 17-20 and 22 under 35 U.S.C. § 103(a) be withdrawn.

As all other rejections of record rely upon Takekuma and Kimura for describing the above-distinguished features, and the above-distinguished features are not disclosed or suggested by the Takekuma and Kimura, alone or in combination with any other art of record, it is respectfully submitted that a *prima facie* case of obviousness has not been presented. Accordingly, it is respectfully requested that the rejection of Claims 3, 9-10, 12, 16 and 23 under 35 U.S.C. § 103(a) be withdrawn.

For the reasons discussed above no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a Notice of Allowance for Claims 1-7, 9-12 and 14-23 is earnestly solicited.


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<sup>7</sup> See *KSR International Co. v. Teleflex, Inc.*, 82 USPQ2d, 1385-1395 (2007) (citing *United States v. Adams*, 148 USPQ 479 (1966)) (emphasis added)..

Should, however, the Examiner deem that any further action is necessary to place this application in even better form for allowance, the Examiner is encouraged to contact Applicants' representative at the below-listed telephone number.

Respectfully submitted,

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